



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application : Efraim Sagiv et al.
Serial No. : 09/907,224
Filed : July 17, 2001
For : WATER-BASED ADHESIVE
Examiner : P. Szekely
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BRIEF FOR APPELLANTS

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
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Sir:

This is an appeal from an Official Action dated October 10,
2002 finally rejecting claims 1-25 of the above-identified
patent application.

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REAL PARTY IN INTEREST

Appellants state that the real party in interest in this appeal is Olin Corporation, assignee of the present application by virtue of an assignment recorded in the Patent Office on April 20, 2000, at Reel 010771, Frame 0336.

RELATED APPEALS AND INTERFERENCES

Appellants state that there are no appeals or interferences related to the present appeal.

STATUS OF THE CLAIMS

Claims 1-25 are pending in the application. Claims 1-13 and 21-25 stand rejected under 35 USC §112, first paragraph, as containing subject matter which was allegedly not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention. Claims 1-6 and 9-11 stand rejected under 35 USC §102(e) as being anticipated by U.S. Patent No. 6,180,244 to Rayner et al. Claims 1-25 stand rejected under 35 USC §103 as being unpatentable over U.S. Patent No. 6,180,244 to Rayner et al. in view of U.S. Patent No. 5,877,240 to Piret et al.

Appellants submit that the claims herein appealed are claims 1-25. A copy of the presently appealed claims is provided in Appendix I attached hereto.

STATUS OF AMENDMENTS

No amendments have been filed in the present application subsequent to the Final rejection mailed October 10, 2002. A Notice of Appeal was filed on April 7, 2003.

SUMMARY OF THE INVENTION

Briefly, the present invention relates generally to waterborne coatings. As specified in claim 1 shown in Appendix I, the present invention is directed to a water-based adhesive composition, comprising an admixture of: (A) about 5 to about 80 wt% of an aqueous polyester polyurethane dispersion, that is the reaction product of (1) the condensation product of 1,4-butanediol or 1,2-ethanediol and adipic acid, and (2) a diisocyanate compound selected from the group consisting of hexamethylene diisocyanate, isophorone diisocyanate, and combinations thereof; and (B) about 95 to about 20 wt% of an aqueous aliphatic polyurethane dispersion. Support for claim 1 can be found in the specification at page 8, lines 17, continuing to page 10, line 9. Additional support for the chemical composition may be found in the specification at page 9, line 7 and Table I, page 20.

ISSUES

The issues in this appeal are as follows:

1. Whether claims 1-13 and 21-25 contain subject matter which is not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention as required under 35 USC §112, first paragraph;
2. Whether claims 1-6 and 9-11 are anticipated under 35 USC §102(e) by U.S. Patent No. 6,180,244 to Rayner et al. (Exhibit A); and
3. Whether claims 1-25 are unpatentable under 35 USC §103 over U.S. Patent No. 6,180,244 to Rayner et al. (Exhibit A) in view of U.S. Patent No. 5,877,240 to Piret et al. (Exhibit B).

GROUPING OF CLAIMS

Appellants submit that the claims may be grouped as follows:

Claims 1-13 and 21-25 stand rejected under 35 USC §112, first paragraph;

Claims 1-6 and 9-11 stand rejected under 35 USC §102(e);
and

Claims 1-25 stand rejected under 35 USC §103.

Appellants submit that the claims of each of the above groups stand or fall together.

ARGUMENT

1. Rejections under 35 U.S.C. §112, first paragraph

A. In paragraph 3 of the final Official Action, the Examiner stated:

Claims 1-12 and 21-25 are rejected under 35 USC §112, first paragraph as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The polyester urethane claimed is not the reaction product of the claimed monomers. It is the reaction product of the claimed monomers and sulfonic acid. Dispercoll U54 is a sulfonated polyester urethane. See Paragraph #1.

The independent claims subject to this rejection are claims 1, 11, and 21. As shown in Appendix I, Claim 1 recites:

1. A water-based adhesive composition, comprising an admixture of:

A. about 5 to about 80 wt% of an aqueous polyester polyurethane dispersion, that is the reaction product of (1) the condensation product of 1,4-butanediol or 1,2-ethanediol and adipic acid, and (2) a diisocyanate compound selected from the group consisting

- of hexamethylene diisocyanate, isophorone diisocyanate, and combinations thereof; and
- B. about 95 to about 20 wt% of an aqueous aliphatic polyurethane dispersion.

Claim 11 recites:

11. A water-based adhesive composition, comprising an admixture of:

- A. about 17.5 to about 22.5 wt% of an aqueous polyester polyurethane dispersion, that is the reaction product of (1) the condensation product of 1,4-butanediol or 1,2-ethanediol and adipic acid, and (2) a diisocyanate compound selected from the group consisting of hexamethylene diisocyanate, isophorone diisocyanate, and combinations thereof;
- B. about 82.5 to about 77.5 wt% of an aqueous aliphatic polyurethane dispersion;
- C. about 0.005 to about 2 wt% of one or more additives selected from the group consisting of film-forming agents, adhesion promoters, tackifiers, surfactants, defoamers, decorative components, and combinations thereof; and
- D. about 0.5 to about 25 wt% of a solvent selected from the group consisting of water, N-methylpyrrolidone, butylcarbitol, 2-butoxyethanol, 2,2-butoxyethoxyethanol, and combinations thereof.

Claim 21 recites:

21. A water-based adhesive composition, comprising an admixture of:

- A. about 5 to about 80 wt% of an aqueous polyester polyurethane dispersion, that is the reaction product of (1) the condensation product of 1,4-butanediol or 1,2-ethanediol and adipic acid, and (2) a diisocyanate compound selected from the group consisting of hexamethylene diisocyanate, isophorone diisocyanate, and combinations thereof;
- B. about 95 to about 20 wt% of an aqueous aliphatic polyurethane dispersion; and
- C. about 0.005 to about 2 wt% of an epoxylated silane adhesion promotor.

Appellants submit that the specification describes the subject matter defined by each of the rejected claims. At page 9, line 12, the specification now includes a clear description of the claimed aqueous polyester polyurethane dispersion. More specifically, that paragraph, added by preliminary amendment filed with the application, recites

The aqueous polyester polyurethane dispersion is made from a polyester polymer and a diisocyanate compound. The polyester polymer portion of the aqueous polyester polyurethane is preferably made by condensing 1,4-butanediol or 1,2-ethanediol with adipic acid. The diisocyanate compound used in the aqueous polyester polyurethane dispersion is preferably a diisocyanate compound selected from the group consisting of hexamethylene diisocyanate, isophorone diisocyanate, and combinations thereof.

Appellants submit that the phrase in claims 1, 11, and 21 that recites the aqueous polyester polyurethane dispersion is the reaction product of (1) the condensation product of 1,4-butanediol or 1,2-ethanediol and adipic acid is fully supported and described by this specific language contained in the specification.

Appellants further submit that the specification enables any person skilled in the art to make and use the subject matter defined by each of the rejected claims, and sets forth the best mode contemplated by the inventor of carrying out the invention. Appellants submit that throughout the application, disclosure is provided to enable one skilled in the art to make and use the invention. For example, at page 8, line 22, and continuing to page 15, line 12, Appellants describe in detail each of the components of the invention recited in the presently rejected claims. At page 15, lines 13-21, the specification describes how to prepare the composition of the present invention. At

page 15, line 22, continuing to page 19, line 4, the specification describes in detail how to use the claimed composition and apply it to a substrate. The specification at pages 21-23 further discloses detailed examples of how to make and use the invention, as well as the best mode of practicing the claimed invention. Accordingly, Appellants submit that this rejection is erroneous and that the specification complies with 35 USC §112, first paragraph.

2. Rejections under 35 U.S.C. §102(e)

Claims 1-6 and 9-11 stand rejected under 35 USC §102(e) as being anticipated by U.S. Patent No. 6,180,244 to Rayner et al. (Exhibit A). At page 3 of the final office action, the Examiner stated:

Rayner et al. disclose Dispercoll U54 and Neorez 9617 in Tables 3a and 3b. Solvents are listed in column 7, lines 17-34. Surfactants can be found in column 6, lines 29-38.

Rayner et al. disclose a water-based adhesive, essentially plasticizer-free, comprising a combination of (a) 15-85% by weight, most preferably 35-57% by weight, sulfonated polyester urethane dispersion; (b) 15-55% by weight, most preferably 25-37% by weight, acrylate-vinyl dispersion; (c) 0-50% by weight, most preferably 6-17% by weight, non-sulfonated urethane dispersion; (d) optionally 0-55% by weight, preferably 7-15% by weight, non-acrylate vinyl dispersion; (e) optionally, 0-10% solvent by weight of the total formulation, preferably 0-5% by weight; (f) 0-1% by weight, preferably 0.15-0.25% by weight, rheology modifier capable of producing textured patterns while maintaining a uniform dispersion of the aforementioned materials; and (g) 0-7% by weight of the total formulation crosslinking agent. Additives may also be added, such as

pigments, defoamers, antioxidants, coalescing agents, UV absorbers and the like.

In contrast, claim 1 recites a water-based adhesive composition, comprising an admixture of:

- A. about 5 to about 80 wt% of an aqueous polyester polyurethane dispersion, that is the reaction product of (1) the condensation product of 1,4-butanediol or 1,2-ethanediol and adipic acid, and (2) a diisocyanate compound selected from the group consisting of hexamethylene diisocyanate, isophorone diisocyanate, and combinations thereof; and
- B. about 95 to about 20 wt% of an aqueous aliphatic polyurethane dispersion.

Claim 11 recites a water-based adhesive composition, comprising an admixture of:

- A. about 17.5 to about 22.5 wt% of an aqueous polyester polyurethane dispersion, that is the reaction product of (1) the condensation product of 1,4-butanediol or 1,2-ethanediol and adipic acid, and (2) a diisocyanate compound selected from the group consisting of hexamethylene diisocyanate, isophorone diisocyanate, and combinations thereof;
- B. about 82.5 to about 77.5 wt% of an aqueous aliphatic polyurethane dispersion;
- C. about 0.005 to about 2 wt% of one or more additives selected from the group consisting of film-forming agents, adhesion promoters, tackifiers, surfactants, defoamers, decorative components, and combinations thereof; and
- D. about 0.5 to about 25 wt% of a solvent selected from the group consisting of water, N-

methypyrrolidone, butylcarbitol, 2-butoxyethanol,
2,2-butoxyethoxyethanol, and combinations thereof.

Appellants submit that the rejection of the claims as anticipated by the compositions disclosed by Rayner et al. is erroneous and should be reversed.

To anticipate a claim, a single source must contain all of the elements of the claim. *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1379, 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986); *Atlas Powder Co. v. E.I. du Pont De Nemours & Co.*, 750 F.2d 1569, 1574, 224 U.S.P.Q. 409, 411 (Fed. Cir. 1984). Missing elements may not be supplied by the knowledge of one skilled in the art or the disclosure of another reference. *Structural Rubber Products Co. v. Park Rubber Co.*, 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984). Where a reference discloses less than all of the claimed elements, an examiner may only rely on 35 U.S.C. §103. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 780, 227 U.S.P.Q. 773, 777 (Fed. Cir. 1985).

Appellants submit that the present invention is a water-based adhesive comprising a combination of two polyurethane dispersions. The first polyurethane dispersion is an aqueous polyester polyurethane dispersion that is the reaction product of (1) the condensation product of 1,4-butanediol or 1,2-ethanediol and adipic acid, and (2) a diisocyanate compound selected from the group consisting of hexamethylene diisocyanate, isophorone diisocyanate, and combinations thereof. The other polyurethane dispersion is an aqueous aliphatic polyurethane dispersion.

Appellants submit that the rejection of the claims under 35 U.S.C. §102(e) is erroneous because Rayner et al. does not

disclose an aqueous polyester polyurethane dispersion that is the reaction product of (1) the condensation product of 1,4-butanediol or 1,2-ethanediol and adipic acid, and (2) a diisocyanate compound selected from the group consisting of hexamethylene diisocyanate, isophorone diisocyanate, and combinations thereof, as particularly recited in claims 1 and 11. Appellants submit that the composition disclosed by Rayner includes, at a minimum, a sulfonated polyester urethane dispersion and an acrylate-vinyl dispersion. Appellants submit that such urethane polymers are not recited in the present claims, and that the claimed urethane polymers are clearly distinguishable from the polymers disclosed by Rayner et al.

Appellants submit that claimed composition recited in claims 1 and 11 are neither disclosed or suggested by Rayner et al. Appellants submit that the compositions disclosed in the Rayner et al. reference do not contain all of the elements of the composition claimed in claims 1 or 11, and therefore cannot anticipate the presently claimed invention. Accordingly, the rejection under 35 U.S.C. §102 of the claims over Rayner et al. is erroneous and should be reversed.

3. Rejections under 35 U.S.C. §103

Appellants further submit that the rejection of claims 1-25 under 35 U.S.C. §103 as being allegedly unpatentable over U.S. Patent No. 6,180,244 to Rayner et al. (Exhibit A) in view of U.S. Patent No. 5,877,240 to Piret et al. (Exhibit B) is also erroneous and should be reversed.

As indicated above, the claims of the present invention include specific limitations that recite that the aqueous polyester polyurethane dispersion is the reaction product of (1) the condensation product of 1,4-butanediol or 1,2-ethanediol and

adipic acid, and (2) a diisocyanate compound selected from the group consisting of hexamethylene diisocyanate, isophorone diisocyanate, and combinations thereof. None of these features are disclosed or suggested by Rayner et al.

Specifically, Appellants submit that the specific limitations recited above regarding the composition of the aqueous polyester polyurethane component of the present invention are not disclosed or suggested in the cited art relied on in the rejection. As indicated above, Rayner et al. disclose a water-based adhesive made from a sulfonated polyester urethane dispersion and an acrylate-vinyl dispersion. Rayner et al. provide no disclosure or suggestion concerning the composition of either of these components, much less that one of them is the condensation product of 1,4-butanediol or 1,2-ethanediol and adipic acid, and a diisocyanate compound selected from the group consisting of hexamethylene diisocyanate, isophorone diisocyanate, and combinations thereof.

U.S. Patent No. 5,877,240 to Piret et al. discloses an epoxy and polyurethane-based sizing composition for fibers used in the reinforcement of engineered thermoplastic molded composites. The sizing composition of the invention comprises (a) a first film-forming polymeric composition comprising a thermoplastic polyurethane; (b) a second film-forming composition comprising an epoxy-cresol-novolac resin and bisphenol F; (c) one or more silane coupling agents; and (d) water. The silane coupling agents include gamma-glycidoxypropyltrimethoxy silane and gamma-aminopropyltriethoxy silane.

Appellants submit that any combination of the Rayner et al. and Piret et al. references, taken as a whole, does not make the present invention obvious. According to the Examiner, a

combination of the Rayner et al. and Piret et al. references would produce a product that is a water-based adhesive comprising a combination of (a) a sulfonated polyester urethane dispersion; (b) an acrylate-vinyl dispersion; and (c) one or more silane coupling agents, such as gamma-glycidoxypyrpyltrimethoxy silane and gamma-aminopropyltriethoxy silane. However, such a combination still does not make the present invention obvious because such a combination does not provide any teaching or suggestion of an aqueous polyester polyurethane dispersion that is the reaction product of (1) the condensation product of 1,4-butanediol or 1,2-ethanediol and adipic acid, and (2) a diisocyanate compound selected from the group consisting of hexamethylene diisocyanate, isophorone diisocyanate, and combinations thereof. Appellants therefore submit that this limitation renders the claimed subject matter unobvious over the prior art references of Rayner et al. and Piret et al., taken individually or in combination.

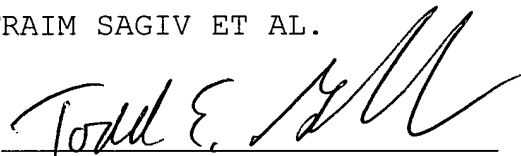
CONCLUSION

Based on the above arguments, Appellants submit that the rejection of the claims of the present invention as indefinite under 35 U.S.C. §112, second paragraph, is erroneous. Appellants further submit that the rejection of the claims as anticipated under 35 U.S.C. §102(e) over U.S. Patent No. 6,180,244 to Rayner et al. is erroneous. Appellants further submit that the rejection of the claims as obvious under 35 U.S.C. §103 over the combination of U.S. Patent No. 6,180,244 to Rayner et al. and U.S. Patent No. 5,877,240 to Piret et al. is erroneous. Accordingly, Appellants respectfully request that the Board overturn such errors.

Respectfully submitted

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APPENDIX I

CLAIMS ON APPEAL:

1. A water-based adhesive composition, comprising an admixture of:
 - A. about 5 to about 80 wt% of an aqueous polyester polyurethane dispersion, that is the reaction product of (1) the condensation product of 1,4-butanediol or 1,2-ethanediol and adipic acid, and (2) a diisocyanate compound selected from the group consisting of hexamethylene diisocyanate, isophorone diisocyanate, and combinations thereof; and
 - B. about 95 to about 20 wt% of an aqueous aliphatic polyurethane dispersion.
2. The water-based adhesive composition of claim 1, wherein said aqueous polyester polyurethane dispersion comprises from about 15 to about 25 wt% of said admixture, based on the total weight of said composition.
3. The water-based adhesive composition of claim 1, wherein said aqueous polyester polyurethane dispersion comprises from about 17 to about 23 wt% of said admixture, based on the total weight of said composition.
4. The water-based adhesive composition of claim 1, wherein said aqueous aliphatic polyurethane dispersion comprises from about 85 to about 75 wt% of said admixture, based on the total weight of said composition.

5. The water-based adhesive composition of claim 1, wherein said aqueous aliphatic polyurethane dispersion comprises from about 83 to about 78 wt% of said admixture, based on the total weight of said composition.
6. The water-based adhesive composition of claim 1, further comprising about 0.005 to about 2 wt% of one or more additives selected from the group consisting of film-forming agents, slip agents, flow agents, adhesion promoters tackifiers, surfactants, defoamers, decorative components, and combinations thereof.
7. The water-based adhesive composition of claim 6, wherein said adhesion promotor is an epoxylated silane adhesion promotor.
8. The water-based adhesive composition of claim 7, wherein said epoxylated silane adhesion promotor is γ -glycidoxypropyltrimethoxysilane.
9. The water-based adhesive composition of claim 1, further comprising from about 0.5 wt% to about 25 wt% of a solvent.
10. The water-based adhesive composition of claim 9, wherein said solvent is selected from the group consisting of water, N-methylpyrrolidone, butylcarbitol, 2-butoxyethanol, 2,2-butoxyethoxyethanol, and combinations thereof.
11. A water-based adhesive composition, comprising an admixture of:

- A. about 17.5 to about 22.5 wt% of an aqueous polyester polyurethane dispersion, that is the reaction product of (1) the condensation product of 1,4-butanediol or 1,2-ethanediol and adipic acid, and (2) a diisocyanate compound selected from the group consisting of hexamethylene diisocyanate, isophorone diisocyanate, and combinations thereof;
- B. about 82.5 to about 77.5 wt% of an aqueous aliphatic polyurethane dispersion;
- C. about 0.005 to about 2 wt% of one or more additives selected from the group consisting of film-forming agents, adhesion promoters, tackifiers, surfactants, defoamers, decorative components, and combinations thereof; and
- D. about 0.5 to about 25 wt% of a solvent selected from the group consisting of water, N-methylpyrrolidone, butylcarbitol, 2-butoxyethanol, 2,2-butoxyethoxyethanol, and combinations thereof.

- 12. The water-based adhesive composition of claim 11, wherein said adhesion promotor is an epoxylated silane adhesion promotor agent.
- 13. The water-based adhesive composition of claim 12, wherein said epoxylated silane adhesion promotor is γ -glycidoxypropyltrimethoxysilane.
- 14. A method of adhering a workpiece to a substrate, comprising the steps of:

A. applying a water-based adhesive composition to a substrate, said water-based adhesive composition comprising an admixture of:

1. about 17.5 to about 22.5 wt% of an aqueous polyester polyurethane dispersion;
2. about 82.5 to about 77.5 wt% of an aqueous aliphatic polyurethane dispersion;
3. about 0.005 to about 2 wt% of one or more additives selected from the group consisting of film-forming agents, adhesion promoters, tackifiers, surfactants, decorative components, defoamers, and combinations thereof; and
4. about 0.5 to about 25 wt% of a solvent selected from the group consisting of water, N-methylpyrrolidone, butylcarbitol, 2-butoxyethanol, 2,2-butoxyethoxyethanol, and combinations thereof;

B. curing said water-based adhesive onto said substrate;
and

C. adhering said workpiece onto said substrate.

15. The method of claim 14, wherein said adhesion promotor is an epoxylated silane adhesion promotor.
16. The method of claim 14, wherein said epoxylated silane adhesion promotor is γ -glycidoxypyrpyltrimethoxysilane.
17. The method of claim 14, wherein said applying step is accomplished by draw down rod, doctor blading, gravure roll, spraying, or dipping.

18. The method of claim 14, wherein said curing step occurs at between 200 and 500°F for between 2 and 50 seconds.
19. The method of claim 14, wherein said adhering step comprises pressing said substrate and said workpiece together at about 100 psi for approximately 5-60 seconds.
20. The method of claim 14, wherein said substrate is selected from the group consisting of stainless steel, aluminum, copper, iron, cold rolled steel, phosphatized steel, primer-coated steel, polyester reinforced fiber glass, butyrates, PVC, ABS, injection molded urethanes, polystyrenes, polyimides, polyamides, and combinations thereof.
21. A water-based adhesive composition, comprising an admixture of:
 - A. about 5 to about 80 wt% of an aqueous polyester polyurethane dispersion, that is the reaction product of (1) the condensation product of 1,4-butanediol or 1,2-ethanediol and adipic acid, and (2) a diisocyanate compound selected from the group consisting of hexamethylene diisocyanate, isophorone diisocyanate, and combinations thereof;
 - B. about 95 to about 20 wt% of an aqueous aliphatic polyurethane dispersion; and
 - C. about 0.005 to about 2 wt% of an epoxylated silane adhesion promotor.
22. The water-based adhesive composition of claim 21, wherein said aqueous polyester polyurethane dispersion comprises

from about 15 to about 25 wt% of said admixture, based on the total weight of said composition.

23. The water-based adhesive composition of claim 21, wherein said aqueous aliphatic polyurethane dispersion comprises from about 85 to about 75 wt% of said admixture, based on the total weight of said composition.
24. The water-based adhesive composition of claim 21, wherein said epoxylated silane adhesion promotor is γ -glycidoxypropyltrimethoxysilane.
25. The water-based adhesive composition of claim 21, further comprising about 0.5 to about 25 wt% of a solvent selected from the group consisting of water, N-methylpyrrolidone, butylcarbitol, 2-butoxyethanol, 2,2-butoxyethoxyethanol, and combinations thereof.

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